ADDITIONS TO THE ALGAE OF THE WEST END OF LAKE ERIE[1]

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The algae of the west end of Lake Erie is exceptionally well known through the work of Tiffany who has contributed detailed reports on the plankton (1934) and filamentous (1937) forms. It has been the privilege of the writer to continue this work during the summers of 1938, 1940, and 1941, while a member of the staff of the Franz Theodore Stone Biological Laboratory at Put-in-Bay, Ohio.

Because of the extended period of collecting by Tiffany (1920–1936), and the thoroughness with which the collections were examined, few new forms have appeared in the writer's collections. Due to the importance of these previous reports to students of aquatic biology in the Island Region of Lake Erie, the writer feels that supplementary lists of unreported forms will be of value.

For a general discussion of the region, and particularly for the algal habitats involved, the reader is referred to either of the reports by Tiffany.

Although the number of previously unreported forms is not large, some relatively rare and interesting genera are included. Such genera as *Glaucocystis*, *Gloeochaete*, *Monocilia*, *Hyalobryon*, *Hemidinium*, and *Kentrosphaera* have seldom been collected from the United States. *Gloeodinium montanum* Klebs, *Coelastrum Bohlini* Schmidle and Senn, and *Trachelomonas bulla* Stein appear to be new records for the United States. The *Batrachospermum* which the writer has been unable to identify because of its immature condition is reported because it is the first member of the Rhodophyceae to be collected in the region.

Credit for collections made by members of the freshwater algae class during the summer of 1940 is given after the descriptions.

SPECIES LIST

Glaucocystis Nostochinearum Itz. (Pl. II, Fig. 2). Cells of the Oocystis-like organism ovoid, solitary or in colonies of 2–4–8 cells, each cell containing numerous, curved, rod-shaped, blue-green bodies which are considered to be members of the Myxophycean family, Chroococcaceae. Size of the Oocystis-like cells 11–12 x 18–21μ, of the colony 28 x 37μ.

Haunk's Pond, Middle Bass; Smith Pond, N. Bass; E. Harbor; Pelee.

Although never abundant, this relatively rare alga is widely distributed in the Island Region of Lake Erie. With the exception of the specimens collected in Fox's Marsh, Pelee Island, the dimensions are well within the limits of the species *Nostochinearum*. Those from Pelee Island have a diameter of 21μ and a length of 32–35μ.

Gloechaete Wittrockiana Lagerh. (Pl. I, Fig. 8). The four colorless cells of the Chlorophycean host are embedded within a broad hyaline envelope, and each cell bears a long gelatinous bristle. The cells of the endophyte which are brilliant blue-green in color occupy a region corresponding in shape and position to the cup-shaped chloroplast in cells of the Volvocales. The specific name *Gloeochaete* is restricted to the Myxophycean component of the association and is not applied to the Tetrasporine host. Cells of the host 13–16μ in diameter. Diameter of colony 45–50μ.

Epiphytic on colonies of Rivularia, Haunk's Pond, Middle Bass.

Plectonema Wollei Farlow (Pl. I, Fig. 3). Filaments long, not contorted; false branches few in number, usually single; sheath thick and slightly yellow when old, lamellated; cells discoidal, not constricted at the cross walls, dark blue green, end cells rounded. Filaments 42–60μ, sheath 5–10μ, cells 37–45 x 5–7μ.

Middle Isl., floating off shore in deep water; on *Chara sp.*, in 10 feet of water, Hatchery Bay.

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Monocilia viridis Gerneck (Pl. II, Fig. 4). A more or less distinctly branched filament, filaments sometimes short and tending toward a palmelloid condition. Cells about 10–12μ in diameter, varying to 15μ in length, each with several discoid, parietal chromatophores.

Growing on old shells of Daphne ? in a muddy, contaminated pool on South Bass. Collected by E. G. Snyder.

Botrydium granulatum (L.) Grev. (Pl. I, Fig. 7). A terrestrial algae composed of a unicellular, multinucleate, globular structure above the surface of the soil, and a much branched, colorless rhizoidal system below. The diameter of the aerial portion may reach 2 mm.

On damp soil in vineyards, North Bass; Pelee.

Hyalobryon mucicola (Lemm.) Pascher (Pl. II, Fig. 5). Cells solitary, epiphytic on cells of *Fragillaria sp.*: receptacle extremely delicate, upper portion nearly cylindrical with a flaring mouth, lower portion conical and produced into a short stipe, growth rings appearing as minute denticulations. Protoplast ovoid, at base of receptacle, with two golden-brown chromatophores and two flagella of unequal length. Receptacle 4.6 x 23–28μ.

Hatchery Bay.

Because of its extremely small size and the superficial resemblance to individuals of *Dinobryon* colonies, this algae is easily overlooked. However, it is not to be confused with such individuals when its epiphytic habit and the presence of growth rings has been determined.

Hemidinium nasutum Stein. (Pl. II, Fig. 6). Cells ellipsoidal, strongly flattened, girdle incompletely encircling the cell.

Quarry pools, Kelleys Island. Collected by Miss Dorothy Clum.

Gloeodinium montanum Klebs. (Pl. I, Fig. 2). Cells large, nearly spherical, united in four-celled colonies by a common, concentrically stratified envelope, each cell also with a stratified envelope. Chloroplasts numerous, golden-brown, radially arranged, sometimes partially obscured by large amounts of starch and oily substances. Diameter of colony 69–74μ, diameter of cells 25–28μ.

Associated with members of the Chlorococcales and desmids on the wet surface of peat in Fox's Marsh, Pelee Island.

Oedogonium cyathigerum Wittr. (Pl. I, Fig. 5). Nannandrous, idioandrosporus; oogonia 1–2, subovoid, pore superior; oospore same shape as oogonium, filling it, median spore wall with about 16 longitudinal ridges; dwarf male goblet-shaped, curved; veg. cell 25–30 x 76–105μ; suff. cell 35–46 x 69–92μ; oogonium 55–71 x 64–80μ; oospore 54–69 x 62–74μ; dwarf male 13–16 x 57μ.

Wehrle Pond, Middle Bass.

Chlorochytrium biennis (Klebs) G. S. West (Pl. I, Fig. 9). Cells endophytic, in grass sheaths, ovoid, walls strongly stratified, with localized lamellated thickenings. Young cells green, old cells yellowish to brown. Size of cell 46–70μ.

Quarry pools, Kelleys Isl.

Kentrosphaera Bristolae G. M. Smith (Pl. I, Fig. 4). Cells solitary, free-living, intermingled with numerous genera of the Myxophyceae, cylindrical-elliptic; wall thick, lamellated, with one (sometimes numerous) localized thickening; chloroplast axial with numerous lobes. Diameter 23μ, length 83μ, thickness of wall 3–5.5μ.

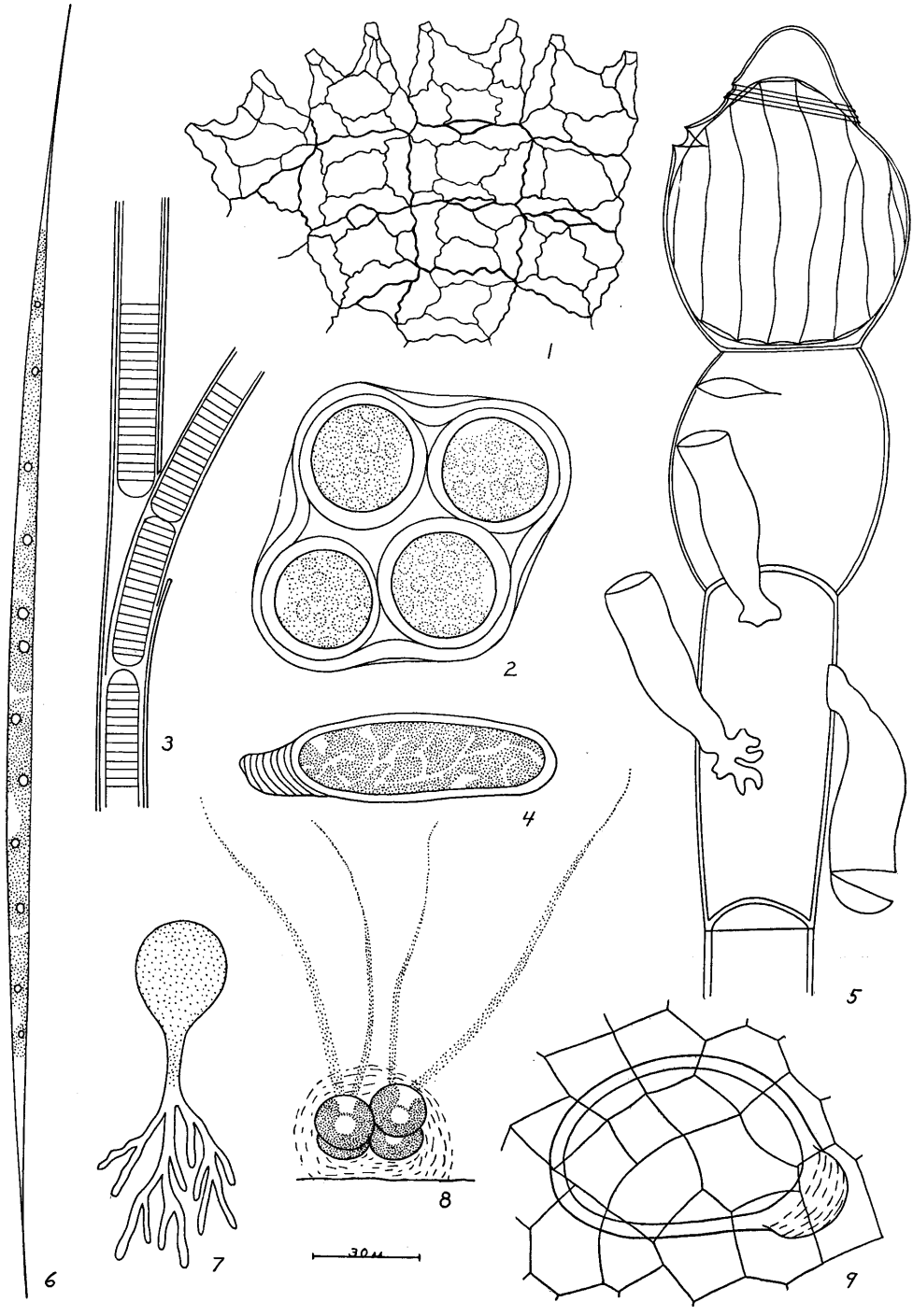
On moist soil in an abandoned quarry, Kelleys Isl.

Pediastrum angulosum (Ehr.) Men. (Pl. I, Fig. 1). Colonies large, circular, perforate; cell walls undulate; surface of cells with a coarse, undulate reticulum. Cells 18–25μ, colony 230μ.

East Harbor.

EXPLANATION OF PLATE I

Fig. 1. *Pediastrum angulosum* (Ehr.) Men.
Fig. 2. *Gloeodinium montanum* Klebs.
Fig. 3. *Plectonema Wollei* Farlow. Not drawn to scale.
Fig. 4. *Kentrosphaera Bristolae* G. M. Smith.
Fig. 5. *Oedogonium cyathigerum* Wittr.
Fig. 6. *Closteriopsis longissima* Lemm.
Fig. 7. *Botrydium granulatum* (L.) Grev. Not drawn to scale.
Fig. 8. *Gloeochaete Wittrockiana* Lagerh.
Fig. 9. *Chlorochytrium biennis* (Klebs) G. S. West.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This form was first described as *P. angulosum* var. *araneosum* Racib., but has since been rejected as a valid variety by Bigeard, Rev. Algol. 7: 347, 1935.

Closteriopsis longissima Lemm. (Pl. I, Fig. 6). Cells solitary, acicular, with ends produced into setiferous apices; chloroplast single, often fragmenting, with 12 or more pyrenoids. Cells 7.5–9μ x 470–650μ.

Hatchery Bay.

The specimens from Lake Erie are large with their maximum dimensions well above those previously recorded. The species differs from the more common variety *tropica* W. and G. S. West because of its greater size as well as its setiferous apices.

Coelastrum Bohlini Schmidle & Senn (Pl. II, Fig. 1). Each cell with four ridges or flanges extending across the surface, 9–12μ in diameter; colonies somewhat irregular, about 27μ in diameter.

Quarry pools, Kelleys Isl.; Smith Pond, N. Bass.

The material compares well with the figure given by Schmidle in his 'Susswasseralgen" (1898).

Tetraedron siamensis (W. and G. S. West) Wille (Pl. II, Fig. 3). Cells solitary with a strongly convex outer surface and a slightly concave inner surface, ends produced into stout, usually curved spines. Size of cell 25–28 x 55–65μ.

Haunk's pond, Middle Bass.

Euglena tripteris (Dry.) Klebs (Pl. II, Fig. 7). Cells 14–103μ, elongate, band-like, spirally twisted, anterior end rounded, posterior end with a long colorless spine; periplast longitudinally striate; not metabolic.

Terwilliger's, S. Bass; Fisher Pond, Middle Bass.

Phacus torta (Lemm.) Skvortzow (Pl. II, Fig. 8). Cells 37–44 x 74–87μ, ovoid, with an elongate posterior spine, strongly twisted; periplast longitudinally striate.

Terwilliger's; Kelleys Isl.; Fisher Pond, Middle Bass; Smith Pond, N. Bass.

Lepocinclis fusiformis (Carter) Lemm. (Pl. II, Fig. 9). Cells 30–35 x 35–51μ, broadly ellipsoidal, somewhat pointed at either pole; periplast firm, spirally striate.

Mound pond, N. Bass.

Trachelomonas armata (Ehr.) Stein var.? (Pl. II, Fig. 13). Lorica 35–37 x 46μ, ovoid, poles rounded, pore with a very short collar; wall with spines of variable length around the poles, median part of wall smooth.

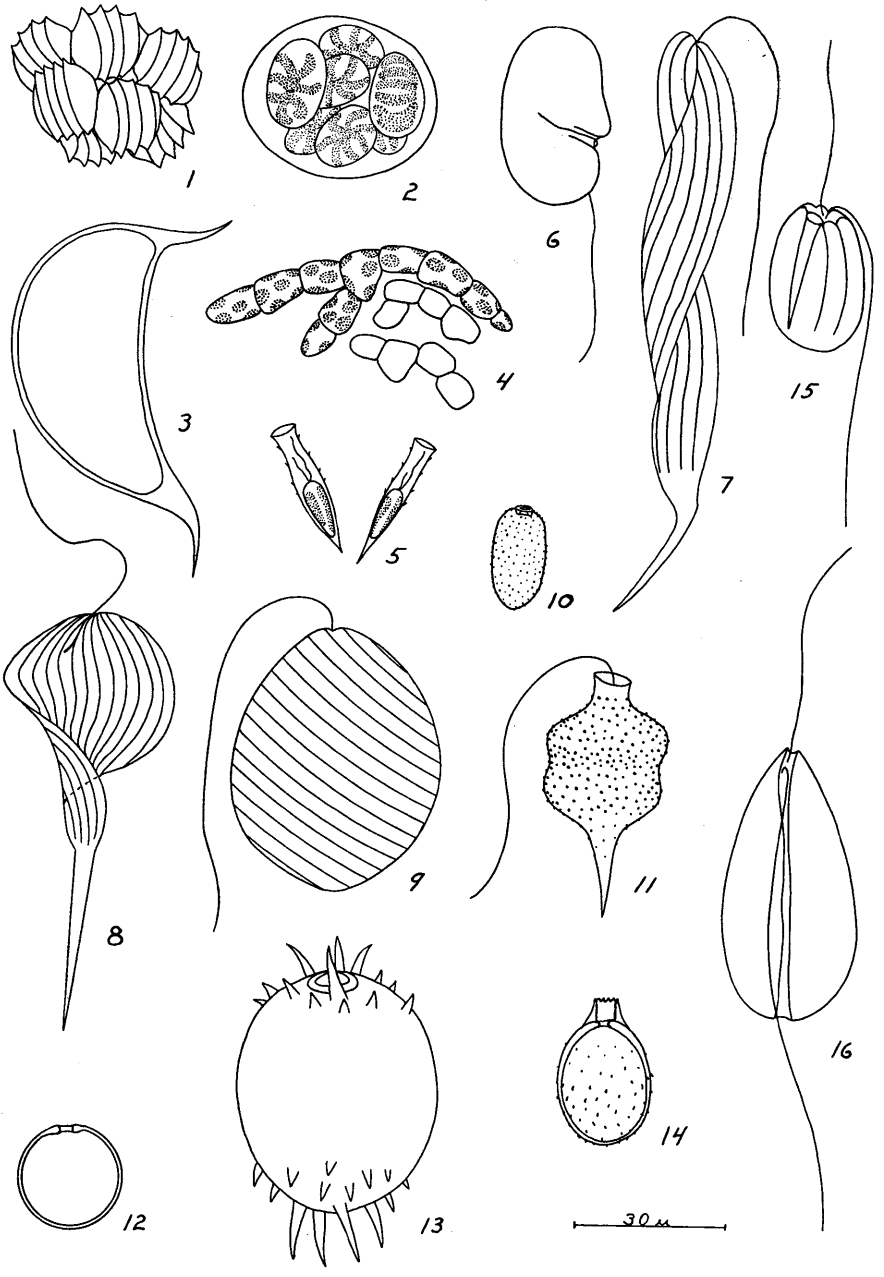
Fisher pond, Middle Bass.

Trachelomonas bulla Stein emend, Deflandre (Pl. II, Fig. 14). Lorica ovoid, irregularly and finely granulate; pore small; collar large, margin finely denticulate. Chromatophores numerous, discoid. Length including collar 29–32μ, length without collar 25–26μ, width 18–23μ.

Collected by E. G. Snyder from a small contaminated pond on South Bass. The dimensions are somewhat less than those given by Deflandre, otherwise similar.

EXPLANATION OF PLATE II

Fig. 1. *Coelastrum Bohlini* Schmidle and Senn.
Fig. 2. *Glaucocystis Nostochinearum* Itz.
Fig. 3. *Tetraedron siamensis* (W. and G. S. West) Wille.
Fig. 4. *Monocilia viridis* Gerneck.
Fig. 5. *Hyalobryon mucicola* (Lemm.) Pascher.
Fig. 6. *Hemidinium nasutum* Stein.
Fig. 7. *Euglena tripteris* (Dry.) Klebs.
Fig. 8. *Phacus torta* (Lemm.) Skvortzow.
Fig. 9. *Lepocinclis fusiformis* (Carter) Lemm.
Fig. 10. *Trachelomonas lacustris* Drezepolski.
Fig. 11. *Trachelomonas girardiana* (Playfair) Deflandre.
Fig. 12. *Trachelomonas volvocina* Ehr.
Fig. 13. *Trachelomonas armata* (Ehr.) Stein var.?
Fig. 14. *Trachelomonas bulla* Stein *emend.* Deflandre.
Fig. 15. *Entosiphon sulcatum* (Duj.) Stein.
Fig. 16. *Anisonema acinus* Duj.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Trachelomonas girardiana (Playfair) Deflandre (Pl. II, Fig. 11). Lorica 23–27 x 42–57μ, subhexagonal in front view, sides retuse, and end view circular; collar elongate and variable in length, oblique in optical section; wall granulate.

Squaw Harbor, South Bass; Smith pond, N. Bass.

If Deflandre (1930) is followed, this form should be *Strombomonas girardiana* (Playfair) Deflandre.

Trachelomonas lacustris Drezepolski (Pl. II, Fig. 10). Lorica 11–21μ, cylindrical, sides parallel, ends rounded; wall densely punctate; pore with a very short collar.

Smith pond, N. Bass.

Trachelomonas volvocina Ehr. (Pl. II, Fig. 12). Lorica spherical, 15–18 x 15–18μ in diameter, smooth, light yellow; pore without a collar.

Mound pond, N. Bass.

Anisonema acinus Duj. (Pl. II, Fig. 16). Cells 13–15 x 37–40μ, oval in outline with the anterior end somewhat narrower, end view compressed, with a longitudinal furrow extending from the insertion of the flagella to the posterior end; wall smooth; swimming flagellum about as long as the cell, trailing flagellum longer.

Quarry pools, Kelleys Isl.; Fisher pond, Middle Bass.

Entosiphon sulcatum (Duj.) Stein (Pl. II, Fig. 15). Cells 16–18 x 20–21μ, ovoid, slightly compressed, longitudinally furrowed with six (to twelve) grooves, grooves evident at anterior end; two flagella, the shorter swimming flagellum directed forward, the longer or trailing flagellum directed backward.

Mound pond, N. Bass. This species has been reported from East Harbor by Walton (1915).

Batrachospermum sp. This is the first recorded genus of the Rhodophyceae from the Island region. Although not identified as to species it is interesting because of the habitat from which it was collected.

Collected by W. A. McLane from shells of snails living in Fox pond, N. Bass.

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